

TABLE 20.2 CONTINUED

Function Name	Description	How to Use It
WEEKDAY (serial_number)	Convert a serial date value to a weekday	Useful in formulas in which you want to calculate paydays or due dates. The result is a number from 1 (Sunday) to 7 (Saturday). Format the result using the "ddd" or "dddd" format to see the results as a day of the week.
HOUR(serial_number) MINUTE(serial_number) SECOND(serial_number)	Convert a serial time value to its hour, minute, or second	Useful when you need to separate the components of a time entered in a cell—to create a list of all starting times for a golf tournament, for example, grouped by hour.

You'll find an interesting collection of special-purpose date and time formats in the Analysis ToolPak, an Excel add-in. `EOMONTH(TODAY(), 0)`, for example, returns the last day of the current month—a useful calculation when working with payments that are due on the last day of the month. (Change the second argument to 1 to return the last day of next month, or -1 for the previous month.) Other date/time functions in the Analysis ToolPak include `WORKDAYS` and `NETWORKDAYS`, which are useful when you're calculating project timelines. To install the Analysis ToolPak, click your Office button and then click the Excel Options button to open the Excel Options dialog box. Click to display the Add-ins group. At the bottom of the window, select Excel Add-ins in the Manage drop-down list box and click Go. Excel opens the Add-ins dialog box, telling you the add-ins that are currently available to you. Click the Analysis ToolPak option and click OK. If the add-in isn't currently installed (and it obviously won't be initially), Excel will offer to install it. Click Yes to begin the installation.

## LOOKUP AND REFERENCE FUNCTIONS

The 18 functions in the Lookup and Reference category are intended for use with lists and tables. `HLOOKUP` and `VLOOKUP`, for example, are designed to help you track down specific information in a table—by row or column—based on the contents of a cell that contains another value to use for comparison. (`LOOKUP`, which sounds like a simpler version of both functions, is included only for compatibility with other spreadsheet programs and is not recommended for use with Excel.) `MATCH`, `INDEX`, and `OFFSET` are other functions in this category that are useful for reference tasks, such as locating information in tax tables.

The syntax of all these functions is hideously complicated and rarely worth the effort. If you must add this type of function to a worksheet, do yourself a favor and use the Lookup Wizard, an Excel add in specifically designed to generate these formulas with minimal effort on your part. For example, if you store a list of part numbers, product names, and prices in an Excel table, you might want to create a data-entry area at the top of the table that lets you enter a specific part number and quickly look up the corresponding product name and price.

**Use It**

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Before you can use the Lookup Wizard, you have to install it. Click your Office button and then click the Excel Options button to open the Excel Options dialog box. Click to display the Add-ins group. At the bottom of the window, select Excel Add-ins in the Manage drop-down list box and click Go. Excel opens the Add-ins dialog box, telling you the add-ins that are currently available to you. Click the Lookup Wizard option and click OK. If the add-in isn't currently installed (and it obviously won't be initially), Excel will offer to install it. Click Yes to begin the installation.

**NOTE**

Depending on your Office 2007 installation, Excel might require that you insert your Office 2007 installation DVD (or CD), or perhaps you can point the installer to a network installation point if you're running an enterprise-style network.

After installing the wizard, you can use it to create lookup formulas that work properly without any debugging.

The worksheet in Figure 20.10 contains one such lookup formula. You enter a part number in cell A2, and Excel finds that value in the corresponding column in the list below, reads across to the value in the Price and Product Name columns in that row, and displays the results in cells C2 and D2. The formulas in cells C2 and D2 that actually perform the lookup are fairly complex, including nested MATCH and INDEX functions.

**Figure 20.10**  
Use the Lookup Wizard to add the data-entry cell (A2) and lookup formulas (C2 and D2) to a worksheet.

Part Number	Price	Description
14543 Industrial	\$1.33	1" Widget
14555 Medical	\$4.34	16-gauge tube, 6"
76544 Industrial	\$1.44	Iron clasp #43
87655 Industrial	\$31.45	Bolt kit, 200 pcs
83276 Industrial	\$16.09	Bolt kit, 45 pcs
92322 Consumer	\$3.44	Plastic sheeting, 5x5
97544 Industrial	\$20.99	Rubber matting, 12-A
98765 Consumer	\$15.33	A4 Cutter
98571 Medical	\$12.21	Blade fitting, 1.5"
99004 Consumer	\$32.21	15 Round metal washers, 7e
99232 Industrial	\$37.80	Brass knob pack, 23w

To add a lookup formula to a worksheet that contains a list, start by creating the list itself. You must include a header row that contains column labels for each field in the list, and the first column must consist of unique values that serve as row labels. The data does not need to be sorted in any order. Leave several blank rows at the top of the list to allow room for placing the lookup cells. After verifying that the list is arranged properly, follow these steps:

**TIP FROM**

*EQ & Woody*

If you plan to create a lookup form on a worksheet, position it above the list or on a separate sheet. If you position cells that contain the formula and parameters alongside or below a list, you could accidentally hide or erase them when you filter or delete records.

1. Select the entire range that contains the list, including the header row. (Although this step is not required, it's easier to select this range before running the wizard.)

2. Click to display your Formulas ribbon. The Lookup button should appear in the Solutions group at the far right of the ribbon. (If this button is not available, you need to install the Lookup Wizard first, as described earlier in this section.) Click the button to run the wizard. In the first step of the wizard, verify that the entire list is selected; if necessary, adjust the selection. Click Next to continue.
3. In the next step (see Figure 20.11), choose the name of the column that contains the value you want to look up—in this case, Product Name. At the bottom of the dialog box, select any row from the drop-down list. Because this value will appear in an input cell, the exact value doesn't matter. Click Next to continue.
4. Specify that you want to copy the formula and lookup parameters to your worksheet, as shown in Figure 20.12.
5. Follow the wizard's prompts to position lookup formulas and related cells on the worksheet. The first value the Lookup Wizard produces is the label over the lookup column; it goes in D1. The second value is the one you'll change later to lookup values; in this case, it goes in cell A2. The third value contains the lookup formula and goes in D2.
6. Repeat steps 2–5 to add the formula that looks up information for other columns. For example, to look up information in the Price column, create a lookup formula and add it to cell C2.

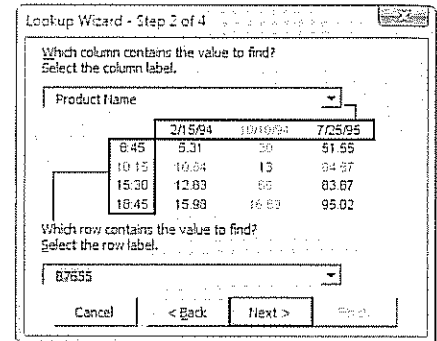


Figure 20.11

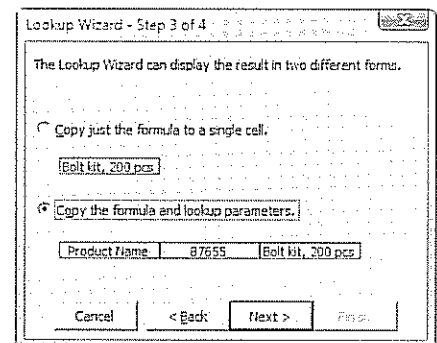


Figure 20.12

TRY FROM

EQC Woody

Add just the lookup formula to your worksheet when you want to perform a different lookup in every row of your table. For example, a golf tournament coordinator might keep a list of each player's current handicap on one worksheet. Using a list on a separate worksheet for each tournament, the coordinator could enter the date, the player's name, and the raw score in the first three columns. A lookup formula in the fourth column of every row would find the current handicap on the other worksheet, based on the member's name in the first column. Use an additional calculated field to figure the net score by subtracting the looked-up handicap from today's score.

## MATHEMATICAL CALCULATIONS

Given Excel's extensive mathematical capabilities, it's only natural that the list of worksheet functions includes 60 mathematical functions. Several handle advanced trigonometry calculations (COS, TAN, SIN, ACOS, ATAN, and ASIN, for example), and the PI function displays the value of pi to 15 decimal places.